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Title
Structured iteratively decodable **codes** based on **Steiner** systems and their application in magnetic recording.

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Abstract
This paper introduces a combinatorial construction of a class of iteratively decodable **codes,** an approach diametrically opposed to the prevalent practice of using large, random-like **codes.** Our **codes** are well-structured and, unlike random **codes,** can lend themselves to a very low complexity implementation. A systematic way of constructing **codes** based on **Steiner** systems and the Z/sub nu /, group is presented, and a hardware efficient encoding algorithm is proposed. A substantial performance improvement of high-rate **Steiner codes** over the existing schemes used in magnetic recording systems is demonstrated. (38 refs).

Descriptors
combinatorial-mathematics; iterative-decoding; magnetic-recording; random-codes.

Keywords

combinatorial construction; iteratively decodable **codes;** random like **codes;** hardware efficient encoding algorithm; performance; high rate **Steiner codes;** magnetic recording systems.

Classification codes

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B6120B **(Codes).**
B0250 (Combinatorial mathematics).